

REMARKS

Claims 1-19 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is respectfully submitted that the claims, as amended, are definite. Accordingly, it is respectfully requested that the rejection of claims 1-19 under 35 U.S.C. § 112, second paragraph be withdrawn.

Claim 11 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Sekiguchi et al. ('039). This rejection is respectfully traversed for the following reasons.

The Examiner relies on the austenitic stainless steel cans 17 of Sekiguchi et al. (*see* col. 4, lines 66-67) as the "austenitic stainless steel portion" recited in claim 11. However, claim 11 recites that the "**rotary shaft** includes an austenitic stainless steel portion" (emphasis added). Cans 17 of Sekiguchi et al. do not form any part of the rotary shaft 4 but instead form part of the holding structure for the axial bearing (*see* col. 4, lines 53-67).

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed in a single prior art reference, *Akzo N.V. v. U.S. Int'l Trade Commission*, 808 F.2d 1471 (Fed. Cir. 1986), based on the forgoing, it is submitted that Sekiguchi et al. ('039) does not anticipate claim 11.

Claims 1<sup>2</sup>-4 and 6-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sekiguchi et al. ('039) in view of Sekiguchi et al. ('472) and Nara et al. ('872). This rejection is respectfully traversed for the following reasons. Claims 1, 6 and 10 are independent, and each recite in pertinent part, "said axial electromagnet is arranged

opposing to one end surface of said rotary shaft, and said permanent magnet is arranged opposing to the other end surface of said rotary shaft."

The Examiner admits that Sekiguchi et al. ('039) does not disclose a permanent magnet as part of the "axial magnetic bearing" and relies on Nara et al. as allegedly disclosing a laser fan using permanent magnets. However, Nara et al. discloses that the relied on permanent magnets 13,14 are for transmitting a drive force to the fan (*see* col. 1, lines 49-57) rather than forming part of an axial bearing.

Further, none of the relied on cited prior art discloses or suggests an axial magnetic bearing whereby the "axial electromagnet is arranged opposing to one end surface of said rotary shaft, and said permanent magnet is arranged opposing to the *other* end surface of said rotary shaft". In contrast, the alleged permanent magnet 15 of Sekiguchi et al. ('039) is formed on the same side as the alleged axial electromagnet of the axial bearing 11.

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard:

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claims 1, 6 and 10 because the proposed combination fails the "all the claim limitations" standard required under § 103.

The Examiner has similarly alleged obviousness of the final clauses of each of claims 1, 6 and 10 which define the configuration of the respective bearings, etc.. For example, with respect to claim 10, the Examiner alleges on page 7, lines 10-11 of the outstanding Office Action that it would be obvious to "determine the optimum placement of

the motor and respective magnetic bearings." However, this allegation is based solely on improper hindsight reasoning using only Applicants' specification as the motivation to select bits and pieces of the prior art and reconstruct the claimed invention. In doing so, the Examiner at best has attempted to show that the claimed elements are *individually* known, without establishing *prima facie* obviousness by providing objective evidence from the prior art that the *combination* of elements is known or suggested.

It is submitted that the proposed combination is improper because the Examiner has not provided the requisite *objective* evidence *from the prior art* that "suggests the desirability" of the proposed combination. As is well known in patent law, a *prima facie* showing of obviousness can only be established if the prior art "suggests the desirability" of the proposed combination using objective evidence. The Examiner is directed to MPEP § 2143.01 under the subsection entitled "Fact that References Can Be Combined or Modified is Not Sufficient to Establish *Prima Facie* Obviousness", which sets forth the applicable standard:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. (*In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990)).

In the instant case, even assuming *arguendo* that the cited prior art can be modified, it is submitted that the "mere fact that [Sekiguchi] can be modified ... does not render the resultant modification obvious" because nowhere does the *prior art* "suggest the desirability of the modification" as set forth by the Examiner.

The Examiner is further directed to MPEP § 2143.01 under the subsection entitled "Fact that the Claimed Invention is Within the Capabilities of One of Ordinary Skill in the

Art is Not Sufficient by Itself to Establish *Prima Facie* Obviousness", which sets forth the applicable standard:

A statement that modifications of the prior art to meet the claimed invention would have been [obvious] because the references relied upon teach that all aspects of the claimed invention were *individually* known in the art is *not* sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. (citing *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)).

In the instant case, even assuming *arguendo* that the cited prior art "teach that all aspects of the claimed invention [are] individually known in the art", it is submitted that such a conclusion "is not sufficient to establish a *prima facie* case of obviousness" because there is no *objective* reason on the record to modify the teachings of the cited prior art in the manner set forth by the Examiner.

It is respectfully submitted that only Applicants have provided the requisite rationale for providing the claimed combination, which can provide advantages and benefits over the prior art. For example, in one exemplary embodiment of the present invention, balance between the attracting force of permanent magnet 14 and the attracting force of axial electromagnet 8 can be utilized for controlling the axial magnetic bearing so as to reduce one axial electromagnet, whereby the apparatus can be reduced in size, a power circuit for driving the axial electromagnet coil can become unnecessary, and hence the overall cost can be reduced (*see, e.g.*, lines 16-22, page 21 of Applicants' specification). As for the reason for the reduction in size discussed above, a permanent magnet does not require any coil therefor and generates stronger magnetic force than an electromagnet even in smaller size.

In addition, an exemplary embodiment of the present invention can overcome heat problems effecting the prior art. Sekiguchi ('039) uses two axial electromagnets 207 and 208 for axial magnetic bearing 210 and both of the electromagnets will generate heat. This

means Sekiguchi ('039) has two heat generators and therefore has a disadvantage in heat compared with the present invention which can have an axial magnetic bearing with one heat generator.

Claims 14-19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sekiguchi et al. ('039) in view of Sekiguchi et al. ('794). Claim 14 is independent. This rejection is respectfully traversed for the following reasons.

Sekiguchi '039 uses cylindrical cans 18 and 19 to protect sensors 8a and 9a and solenoids 8b and 9b. These cans are disposed co-axially with rotatable shaft 4 and secured by welding. In Sekiguchi '794, cylindrical bulkheads 55, 56 in Fig.5 and 16, 17 in Fig.1 are used for the same purpose as that of Sekiguchi '039.

It is difficult, however, to disassemble such a structure as disclosed in the aforementioned prior art for maintenance, and processing precision of the can must be very high. Further, an air gap of the magnetic bearing increases by the thickness of the can (*see* lines 24-27, page 30 of Applicants' specification).

In an exemplary embodiment of the present application, separate sealing members can be used in order to protect the coil and sensor against the laser gas. That is, the first sealing member and the second sealing member can be provided for the coil and sensor, respectively. Such separate sealing members can facilitate the disassembly of the apparatus.

Further, in an exemplary embodiment of the present application, the surface of the magnetic pole of the radial electromagnet can directly face the rotary shaft without being sealed by the sealing member. This arrangement can provide good flow of magnetic flux

(see page 32, lines 22-24 of Applicants' specification) and will not require very high processing precision of the sealing member.

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard:

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claim 14 because the proposed combination fails the "all the claim limitations" standard required under § 103.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1, 6, 10 and 14 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

New claims 20-22 are supported, for example, on page 14, line 29 – page 17, line 22; page 22, lines 14-31; and page 24, line 13 – page 27, line 8; respectively, of Applicants' specification.

Based on all the foregoing, it is submitted that claims 1-24 are definite and patentable over the cited prior art.

**CONCLUSION**

Having fully and completely responded to the Office Action, Applicants submit that all of the claims are now in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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